

USSR

Ion Exchange

UDC 621.039.325

BAYRAMOV, V. T., ~~SUFANOV, M. S.~~, and
imeni M. V. Lomonosov

GORSHKOV, V. I., Moscow State University

"Separation of Isotopes During Exchange Between Molecules of the Gas Phase and
Ions of a Solid-Exchanger. III. Determination of H.E.T.C. During Exchange
Between Ammonium and the Ammonium Form of an Ionite in a Counterflow Column"

Moscow, Zhurnal Fizicheskoy Khimii, Vol XLV, No 11, Nov 71, pp 2909-2911

Abstract: Counter flow of ammonium and a cationite was induced in a 2-meter-high
column 25 mm in diameter (KU-2 X 9 cationite). The H.E.T.C. (height equivalent
of a theoretical column) was calculated both on the basis of the time dependence
of the enrichment factor and on the basis of the distribution of isotopes along
the column once the stationary state had been reached. Variation in the enrich-
ment factor, data for the calculation of the H.E.T.C., and design of the column,
are illustrated graphically and with a table.

UNCLASSIFIED
TITLE--BLOWING THROUGH PORES AND SUCTION IN THE PRESENCE OF FREE
CONVECTION AT A HORIZONTAL PERMEABLE SURFACE -U-
AUTHOR--(03)-BRDLIK. P.M., MOCHALOV, V.A., SUGAK, V.G.
COUNTRY OF INFO--USSR
SOURCE--INZHENERNO-FIZICHESKII ZHURNAL, VOL. 18, APR. 1970, P. 617-623
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--THERMAL BOUNDARY LAYER, HEAT TRANSFER, HEAT TRANSFER
COEFFICIENT, MATHEMATIC ANALYSIS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--2000/1263
CIRC ACCESSION NO--AP0124914
STEP NO--UR/0170/70/018/000/0617/0623
UNCLASSIFIED

CIRC ACCESSION NO--AP0124914
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--20NOV70

ABSTRACT. APPLICATION OF A MACH ZEHNDER INTERFEROMETER TO A STUDY OF THE FORMATION OF A THERMAL BOUNDARY LAYER AND THE HEAT TRANSFER AT A HORIZONTAL HEATED SURFACE IN THE PRESENCE OF FREE CONVECTION. THE EXISTENCE OF A CENTRAL AND AN OUTER REGION, EACH OF WHICH HAS ITS OWN HEAT TRANSFER LAW IS DEMONSTRATED, AND FORMULAS FOR CALCULATING THE HEAT TRANSFER IN EACH REGION WITH ALLOWANCE FOR BLOWING OR SUCTION ARE PROPOSED IN WHICH BLOWING AND SUCTION PARAMETERS FOR EACH OF THE REGIONS ARE INTRODUCED. IT IS SHOWN THAT THE EFFECT OF BLOWING OR SUCTION ON THE HEAT TRANSFER COEFFICIENT IS SMALLER FOR HEATING OF UPPER SURFACE THAN OF THE LOWER SURFACE, DUE TO TURBULENCE ASSOCIATED WITH THE FORMATION OF A CELLULAR FLOW STRUCTURE. FACILITY:
NAUCHNO-ISSLEDOVATEL'SKII INSTITUT STROITEL'NOI FIZIKI, MOSCOW, USSR.

UNCLASSIFIED

USSR

SUGAKOV, V. I., TYCHINSKIY, A. V., DANILOV, V. V.
"Amplified Magnetostatic Echo"

UDC: 534.341.001.572

Moscow, Radiotekhnika i Elektronika, Vol 17, No 4, Apr 72, pp 781-786

Abstract: The paper outlines the theory of the amplified magnetostatic echo. The analysis is based on examination of a system of nonlinearly interacting modes of magnetostatic oscillations with regard to relaxation processes. The curve for the amplification factor as a function of the interpulse spacing is studied in detail. It is shown that this curve may have a maximum determined by competing processes of amplification and relaxation. The theoretical results agree satisfactorily with experimental data.

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"APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R002203210017-3

LOCAL EXCITONS IN NAPHTHALENE -U- UNCLASSIFIED

AUTHOR--SUGAKOV, V.I.

COUNTRY OF INFO--USSR

SOURCE--OPT. SPEKTROSK. 1970, 28(4), 695-8

DATE PUBLISHED-----70

PROCESSING DATE--30OCT70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--EXCITON, NAPHTHALENE, ORGANIC CRYSTAL, CRYSTAL IMPURITY,
ELECTRON ENERGY LEVEL, EXCITATION ENERGY, INDOLE, FURAN, BENZENE
COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--1996/1444

CIRC ACCESSION NO--AP0118433

STEP NO--UR/0051/70/028/004/0695/0698

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R002203210017-3"

ACCESSION NO--AP0118433 UNCLASSIFIED
 ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A COMPARISON BETWEEN THEORY AND
 EXPT. WAS MADE FOR LOCAL EXCITON STATES CREATED IN NAPHTHALENE BY
 IMPURITIES WHOSE EXCITATION ENERGIES DIFFER SIGNIFICANTLY FROM THAT OF
 THE EXCITON BAND OF THE CRYSTAL. THE EXCITATION IN SUCH STATES IS
 LOCALIZED ONLY ON THE CRYSTAL. THE EXCITATION NEAR THE IMPURITY. THREE
 EXPTL. DETD. PARAMETERS OF THE IMPURITIES THIONAPHTHENE (I), INDOLE
 (II), AND BENZOFURAN (III) ARE USED FOR COMPARISON: (1) THE POSITION OF
 THE ELECTRON BAND FORMED BY THE LOCAL EXCITON, (2) THE POLARIZATION
 RATIO FOR THIS BAND, AND (3) THE POSITION OF THE ELECTRON VIBRATION BAND
 CORRESPONDING TO THE LOCAL EXCITATION. UNDER THE ASSUMPTION THAT THE
 IMPURITY MOL. CHANGES THE LEVEL DISTRIBUTION OF ONLY ONE CRYSTAL MOL.,
 THE THEORY OF THE 3 PHYS. QUANTITIES CONTAINS 2 PARAMETERS. THE CHANGE
 IN EXCITATION ENERGY OF A NAPHTHALENE MOL. DUE TO THE PRESENCE OF THE
 IMPURITIES I, II, AND III IS MINUS 97, MINUS 72, AND MINUS 56 CM PRIME
 NEGATIVE, RESP.

PROCESSING DATE--30OCT70

UNCLASSIFIED

TITLE--EFFECT OF IMPURITIES ON THE EXCITON BAND IN MOLECULAR CRYSTALS -U-
AUTHOR--SUGAKOV, V.I. S
COUNTRY OF INFO--USSR
SOURCE--FIZ. TVERD. TELA 1970, 12(1) 216-20
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, PHYSICS
TOPIC TAGS--OPTIC PROPERTY, MOLECULAR CRYSTAL, CRYSTAL IMPURITY, ENERGY
BAND SPECTRUM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REF/FRAME--1980/0240
CIRC ACCESSION NO--AP0048519
STEP NO--UR/0181/70/012/001/0216/0220
UNCLASSIFIED

021
CIRC ACCESSION NO--AP0048519
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--18SEP70

ABSTRACT. THE ENERGY SPECTRUM WAS INVESTIGATED OF A MOL. CRYSTAL CONTG. IMPURITIES, THE ENERGY LEVELS OF WHICH ARE LOCATED FAR FROM THE CRYST. LEVELS. IN THE LINEAR APPROXN., FROM THE IMPURITY CONCN., THE VARIATION OF THE SHAPE AND SHIFT OF THE EXCITON BAND WERE CALCD. OPTICAL PROPERTIES WERE INVESTIGATED OF THE CRYSTALS CONTG. DEFECTS IN THE REGION OF EXCITON ABSORPTION BANDS. THE DEPOLARIZATION OF THE BANDS IN THE PRESENCE OF IMPURITIES IS ANALYZED.

UNCLASSIFIED

USSR

Rare Metals

UDC: 669.794

SUGANEYEV, Yu. S., TAUBIN, M. L., and YAKUTOVICH, M. V., Moscow

"Thermophysical Properties of Yttrium at Temperatures Above 20°C"

Moscow, Izvestiya Akademii Nauk SSSR, Metally, no 6, Nov-Dec 70, pp 215-217

Abstract: The rather limited data on the thermophysical properties of yttrium at elevated temperatures is fragmentary since the tests involved metal specimens with different prehistories. This study deals with the heat electric, and temperature conductance and heat capacity of yttrium at high temperatures. The experiment involved distilled yttrium remelted in an arc furnace at lowered residual argon pressure. The chemical composition of the metal was (wt.%): 99.7 Y; 0.03 Cu; 0.01 Al; 0.03 Fe; 0.02 Ni; 0.12 Cd; 0.02 N; 0.03 O; <0.01 Ta; <0.01 Ca; <0.003 Ni; 0.003 Si. Temperature dependences are cited for heat conductance, heat capacity, temperature conductivity, and electroconductivity within 20 to 400°C. The empirical temperature dependence of heat capacity is $C_p = 294.3 + 1.59T - 3.3 \cdot 10^{-4} T^2$ [joule/kg-deg]. The evaluation of the electron and phonon con-

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SUGANEYEV, Yu. S., et al, Izvestiya Akademii Nauk SSSR, Metallurgy, no 6,
Nov-Dec 70, pp 215-217

ponents of the heat conductance in yttrium indicates that the increase of the phonon component with temperature is owing to the fact that atomic vibrations in the crystal lattice (on heating) become more intensive. An increase in atomic vibration amplitude and, in phonon energy leads to a rise in heat conductance due to the motion of phonons. On the other hand, with an increase in atomic vibrations there is also an increase in the effect of electron scattering on the formed defects (vacancies), the latter increasing in concentration with temperature. This might explain the rather weak dependence of the electron component on temperature.

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SUGANEYEV, VI. S., SEORSHOROV, M. KH., and YAKUTOVICH, M. V., Moscow
UDC 621.791.1
Moscow, Fizika i Khimiya Obrabotki Materialov, No 4, Jul-Aug 70, pp 99-106

Abstract: Formation of a welded union of dissimilar metals in the solid state can be regulated by the following processes: 1) mass transfer in the contact zone, caused, evidently, by different atomic mechanisms and determining the buildup of the contact surface of the interface or formation of physical contact; 2) desorption, dissociation, or dissolution of oxide and other films or absorbed gases contaminating the welded surfaces; 3) activation of surfaces and formation of chemical bonds at the interface. Specimens were welded in a vacuum of 10^{-5} mm Hg. Metals used were not less than 99.3% (Mo) and 99.5% (Y) in purity. Surfaces of molybdenum and yttrium prior to welding were polished on emery paper and degreased with alcohol. The strength of the molybdenum-yttrium union formed as a function of welding temperature showed that strength, under otherwise equal conditions, rises rapidly with temperature. The maximum strength of the union corresponds to the tensile strength of yttrium. Failure of these specimens in testing occurred in yttrium close to the contact surface of the interface, in contrast to specimens not attaining maximum strength, which ruptured along the abutment.

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USSR

VDOVENKO, V. M., LADYGIN, I. N., SUGLOBOV, D. N.

UDC 541.57:546.791.6

"Characteristic Nature of the Valence Oscillation Frequency of Uranyl"
Minsk, Zhurnal Prikladnoy Spektroskopii, Vol XV, No 6, 1971, pp 1105-1109

Abstract: The characteristic nature of the valence frequencies of UO_2^{2+} was analyzed on the basis of data on the low-frequency oscillation spectra of uranyl complexes [Vdovenko, et al, ZhNKh, No 13, 297, 1966; S. S. Bukalov, ZhPS, No 12, 341, 1970] and detection of a linear relation between the valence oscillation frequencies of isotopically substituted uranyl [V. M. Vdovenko, et al., DAN SSSR, No 185, 824, 1969]. The shifts of the valence frequencies of uranyl exceeding a value on the order of 5 cm^{-1} are related in a defined manner to the variation of the force constant of the U-O bond: that is, the variation of the electron state of the latter.

When analyzing the oscillations of the mononuclear complexes of uranyl, the authors used the model of the D_{nh} symmetry complex. This permits the fullest explanation of the role of individual parameters affecting the uranyl frequencies.

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UDC 539.192/.194+535.33/.34.01

VARSHAVSKIY, YU. S., MASHIROV, L. G., SUGLOBOV, D. N.

"On the Possibilities and the Limitations of an Empirical Approach to an Analysis of Vibrational Spectra of Coordination Compounds"

V sb. *Kolebatel'n. spektry v neorgan. khimii* (Vibrational Spectra in Inorganic Chemistry -- Collection of Works), Moscow, "Nauka," 1971, pp 29-37 (from RZh-Fizika, No 5, May 71, Abstract No 5D134)

Translation: A critical discussion of the possibilities of an analysis of spectroscopic data on the basis of empirical correlations between spectroscopic characteristics of correlation compounds and their "chemical structure" is attempted. The meaning of the concept of characteristic frequencies underlying the empirical approach is discussed; it is shown that the use of this concept in no way restricts, in practice, the possibility of chemical interpretation of vibrational spectra of coordination compounds. Cases are discussed in which the absence of a characteristic nature contains important chemical information. From a comparison of the force constants obtained with the aid of approximate calculations with values found by an "exact" calculation it is concluded that the approximate calculations in many

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VARSHAVSKIY, Yu. S., et al, Kolebatel'n, spektry v neorgan, khimii

cases give applicable results. The empirical approach in the sense of volume, truth, and value of information achieved is not inferior to computational methods. Future promise of vibrational spectroscopy of coordination compounds is associated with the parallel, mutually enriching development of both approaches.

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UDC 542.941.546.791.6

BELYAYEV, YU. I., VDOVENKO, V. M., SKOBLO, A. I., and SUGLOBOV, D. N.

"Reduction of Uranyl ion by Titanium (III) in Non-aqueous Media"

Leningrad, Radiokhimiya, Vol 13, No 1, 1971, pp 140-142

Abstract: The reaction of $(C_{10}H_{21})_4NUO_2Cl_3$ with $TiCl_3$ was studied in a series of solvents: dimethylformamide, methanol, TBF, acetone, acetonitrile; its stoichiometry was established for individual cases. In all media studied, a rapid reduction of UO_2^{2+} to U^{4+} occurs at 20° with formation of TiO_2^{2+} and UCl_5^- (dimethylformamide, acetonitrile), UCl_5^- (TBF, acetone), UCl_4 (methanol). The high reaction rate and absence of solvent effect would indicate an intraspherical mechanism to be governing this reaction in which the coordinated spheres of $U(VI)$ and $Ti(III)$ are in direct contact during the transfer of oxygen and of the electron.

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1/2 031
UNCLASSIFIED
TITLE--RAMAN SPECTRA OF ANION COMPLEXES OF URANYL -U- PROCESSING DATE--11SEP70
AUTHOR--BUKALOV, S.S., VDOVENKO, V.M., LADYGIN, I.N., SUGLOBOV, D.N.
COUNTRY OF INFO--USSR
SOURCE--ZH. PRIKL. SPEKTROSK. 1970, 12(2), 341-4
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--RAMAN SPECTRUM, URANIUM COMPOUND, COMPLEX COMPOUND, POTASSIUM, CESIUM, RUBIDIUM, IR SPECTRUM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1989/0237
CIRC ACCESSION NO--AP0106893
STEP NO--UR/0368/70/012/002/0341/0344
UNCLASSIFIED

2/2 031

CIRC ACCESSION NO--AP0106893

UNCLASSIFIED

PROCESSING DATE--11SEP70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RAMAN SPECTRA OF (SHOWN OF MICROFICHE) WERE RECORDED WITH A LASER SPECTROGRAPH. BY ANALOGY WITH IR SPECTRA FREQUENCIES LARGER THAN 200 CM PRIME NEGATIVE ARE ATTRIBUTED TO U HALOGEN VIBRATIONS.

UNCLASSIFIED

0123

USSR

UDC 546.791.6-386:535.343-15

VDOVENKO, V. M., LADYGIN, I. N., SUGLOBOV, D. N.

"Manifestation of Coordination Polymerization of Fluoride Complexes of Uranyl in Frequencies of the Uranium-Fluoride Oscillations"

Moscow, Zhurnal Neorganicheskoy Khimii, Vol 15, No 1, 1970, pp 265-268

Abstract: For a clear idea about the position of the frequencies of bridge and terminal bonds of uranium-fluoride, a study was made of infrared spectra of fluoride complexes of uranyl, whose composition includes only F_{end} and only F_{bridge} or both fluoride atoms. Infrared absorption spectra were measured in the frequency ranges 190-500 and 800-1000 cm^{-1} . Results of the study showed that infrared spectra can be used to determine the U-F bond type in secondary complexes of uranyl. Bridge bonds are less stable and are characterized by lower frequencies of the U-F valency vibrations (270-330 cm^{-1}) than the end vibrations (350-430 cm^{-1}).

Acc. Nr:

AP0034229

Abstracting Service:

CHEMICAL ABST. 4-70

Ref. Code:

UR0078

S

72768r Manifestation of coordinative polymerization of uranyl fluoride complexes in uranium-fluorine vibrational frequencies. Vdovenko, V. M.; Ladygin, I. N.; Suglobov, D. N. (USSR). Zh. Neorg. Khim. 1970, 15(1), 265-8 (Russ). The ν -absorption frequencies of bridging and terminal U-F bonds in $[\text{UO}_2\text{F}_6]^{2-}$, $\text{K}_2(\text{UO}_2\text{F}_6)$, $[(\text{C}_{10}\text{H}_{11})_3\text{NH}](\text{UO}_2\text{F}_6)$ and $[(\text{C}_{10}\text{H}_{11})_3\text{NH}]\text{F}$ were examd. Bridging U-F bonds are weaker and absorb at 270-330 cm^{-1} while terminal U-F bonds absorb at 350-430 cm^{-1} . HMJR]

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UDC 546.791.6-535.343

VDOVENKO, V. M., LADYGIN, I. N., and SUGLOBOV, D. N.

"Ionic Equilibria in the Solutions of Uranyl Complexes With Tridecylammonium Salts"

Leningrad, Radiokhimiya, Vol 14, No 4, 1972, pp 552-558

Abstract: Hydrogen bonding between the cation and anion has been observed in the spectra of nonpolar solutions (benzene, CCl_4) of uranyl anion complexes with R_3NH^+ cations by a shift towards lower frequencies of the ν_{NH} vibration and by the change in the vibrational spectrum of the complex anion in general. The degree of this change depends on the H-bond strength and on the nature of acid ligand. The interaction between the R_3NH^+ and the $[\text{UO}_2\text{F}_5]^{3-}$ and $[\text{UO}_2\text{Cl}_4]^{2-}$ complexes weakens the bond between uranium and the ligand leading to a dissociation of the complex, resulting in the trimethylammonium salt being split off. In mixed solutions of uranyl complexes and alkylammonium salts a shift of the cation R_3NH^+ has been observed from the complex anion to the anion of the salt which forms stronger H-bonds with the R_3NH^+ . Associations with following compositions have been noted to form in such mixed solutions: $[(\text{R}_3\text{NH})_n\text{NO}_3]^{(n-1)+}$ and $[(\text{R}_3\text{NH})_n\text{Cl}]^{(n-1)+}$, where $n = 1, 2$ or 3 .

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USSR

UDC 541.49:546.791

VDOVENKO, V. M., KOZHINA, I. I., SUGLOBOVA, I. G., and CHIRKIST, D. E.

"Formation of Complexes in the Systems Uranium Halide - Alkali Metal Halide.
Preparation and Structure of Rb_2UBr_6 and Cs_2UBr_6 "

Leningrad, Radiokhimiya, Vol 15, No 1, 1973, pp 54-57

Abstract: Rb_2UBr_6 (I; m. 722° , d_4^{20} 4.45 ± 0.02) and Cs_2UBr_6 (II; m. 736° , d_4^{20} 4.74 ± 0.01) were prepared by melting $RbBr$ and $CsBr$, respectively, with a stoichiometric amount of UBr_4 in a sealed, evacuated quartz tube. I and II were green compounds. Just like UBr_4 , they hydrolyzed readily in the air with the formation of HBr , so that all operations with them had to be carried out in an Ar atmosphere. X-ray diffraction measurements showed that I and II crystallized in the cubic system within the spatial group $Fm\bar{3}m-O_h^2$ and with a structure of the K_2PtCl_6 type. The elementary cell contained 4 formula units. The densities of I and II that followed from X-ray measurements corresponded to the picnometrically determined values of d_4^{20} .

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USSR

UDC 541.49:546.791

VDOVENKO, V. M., SUGLOBOVA, I. G., and CHIRKST, D. E.

"Formation of Complexes in the System Uranium Halide-Alkali Metal Halide. The Enthalpies of Formation of Rb_2UBr_6 and Cs_2UBr_6 "

Leningrad, Radiokhimiya, Vol 15, No 1, 1973, pp 58-60

Abstract: The standard enthalpies of formation of Rb_2UBr_6 (I) and Cs_2UBr_6 (II) at 25° were determined on the basis of data obtained by measuring the enthalpies of solution of the initial bromides, I, and II in an 0.5% solution of $FeCl_3$ in 2% HCl. The enthalpy of formation from the initial bromides was calculated at 14.8 ± 0.2 and 22.9 ± 0.2 kcal/mole for I and II, respectively, and that of formation from the elemental substances at 427.4 ± 0.8 and 439.1 ± 0.8 kcal/mole for I and II, respectively. A calculation showed that the enthalpy of formation of the gaseous UBr_6^{++} ion ($307.1 - 307.2$ kcal per g-ion) and the energy of the U-Br bond (68.0 kcal/mole.bond) remained unchanged on transition from I to II. Consequently, the higher enthalpy of formation of II from the initial bromides vs. that of I was evidently due to the greater strength of the extraspherical bonds in II.

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USSR

UDC 541.49:546.791

VDOVENKO, V. M., KOZHINA, I. I., SUGLOBOVA, I. G., and CHIRKST, D. E.

"Complex Formation in the Systems Uranium Halide -- Alkali Metal Halide.
Forms of the Compounds in the Systems Uranium Tetrabromide -- Alkali Metal
Bromide and Their Structural Characteristics"

Leningrad, Radiokhimiya, Vol 15, No 2, 1973, pp 172-177

Abstract: Phase diagrams are reported for the system UBr_4 -MBr and conclusions reached from roentgenographic and thermographic studies concerning the forms of the coordination compounds obtained in these systems. It has been established that the salt systems UBr_4 -MBr ($M = Na, K, Rb, Cs$) form complexes with only a single composition M_2UBr_6 , which appears to be melting congruently, the melting points of individual complexes increasing with the increasing atomic number of the alkali metal. With decreasing atomic number of the alkali metal the cubic face-centered lattice shown by Cs_2UBr_6 and Rb_2UBr_6 undergoes deformation, changing to the tetragonal lattice of K_2UBr_6 .

Na_2UBr_6 has a hexagonal structure,

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USSR

UDC 541.8:546.791.6'131.54-145.4:546.212

VDOVENKO, V. M., BLOKHINA, V. K., and SUGLOBOVA, I. G.

"Mutual Solubility in the System Uranyl Chloride--Water--Diethyl Ether"

Leningrad, Radiokhimiya, Vol 14, No 4, 1972, pp 563-566

Abstract: Uranyl chloride is poorly extracted by ethyl ether from aqueous solutions. Only when the concentration of UO_2Cl_2 reaches the level of 55-60%, there occurs a noticeable transfer of the salt into the ether. With $UO_2(NO_3)_2$ the salt extraction into the ether phase begins with a 30-35% concentration. This lower tendency of uranyl chloride towards extraction with ether is due to a higher concentration of negative charges on the chloride atoms, which results in strong hydration of the complex with water molecules. The solubility of uranyl chloride in ether reaches a maximum when water molecules can be found in the coordination sphere of uranium. The transition of the salt into ether is due to the formation of hydrogen bonds between the water of hydration and the ether molecules. Uranyl chloride typically forms trisolates: two water molecules with one ether molecule, or one water to two ether molecules.

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USSR

UDC 616.981.553-071

KRYUKOVA, Z. V., SUK, I. S., and BONDAREV, L. S., Chair of Infectious Diseases,
Donetsk Medical Institute

"Clinical Symptoms of Botulism"

Kiev, Vrachebnoye Delo, No 7, Jul 70, pp 130-133

Abstract: A discussion is presented of 37 cases of botulism observed between 1954 and 1968 caused by consumption of home-canned foods, primarily pork products. In most patients the initial dyspepsia was quickly followed by general weakness, headache, nausea, dryness in the mouth, and constipation. These symptoms were generally associated with neurologic disturbances (mydriasis, diplopia, anisocoria, decreased visual acuity, nystagmus, absence of or decrease in pharyngeal reflex, difficulty in swallowing, speech disorders), cardiovascular disturbances (muffling of heart sounds and, less commonly, bradycardia, arterial hypotension, myocarditis), and elevated temperature (varying with the severity of the course of the disease). Through comprehensive therapy, with emphasis on the use of antitoxin serum, 34 of the 37 patients recovered.

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Acc. Nr.: **AP0030923**

Ref. Code: UR 0475

PRIMARY SOURCE: Vrachebnoye Delo, 1970, Nr 1, pp 122-123

ORNITHINECARBOMOYLTRANSFERASE IN INFECTIOUS HEPATITIS
AND OBSTRUCTIVE JAUNDICE

L. S. Bondarev and I. S. Sukh (Donetsk)

Results indicate that in angiocholecystitis blood serum ornithine-carbomoyltransferase remained within normal limits, in mechanical jaundice caused by tumors of the pancreato-duodenal region it remained normal or slightly increased in two-thirds of patients and in infectious hepatitis it reflected the severity of the disease.
It is suggested that a study of the blood serum OCT content may be used as an adjunctive test in the differential diagnosis of infectious hepatitis and mechanical jaundice due to malignant tumors.

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REEL/FRAME

19690942

Acc. Nr.: **AP0030923**

Ref. Code: UR 0475

PRIMARY SOURCE: Vrachebnoye Delo, 1970, Nr 1, pp 122-123

ORNITHINECARBOMOYLTRANSFERASE IN INFECTIOUS HEPATITIS
AND OBSTRUCTIVE JAUNDICE

L. S. Bondarev and I. S. Sukh (Donetsk)

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It is suggested that a study of the blood serum OCT content may be used as an adjunctive test in the differential diagnosis of infectious hepatitis and mechanical jaundice due to malignant tumors.

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REEL/FRAME

19690942

USSR

UDC: 621.315.592 (2)

ZUYEV, V. A., LITOVCHENKO, V. G., GLINCHUK, K. D., LITOVCHENKO,
N. M., SUKACH, G. A., and LINNIK, L. F.

"Current Carrier Recombination Processes on Ge and Si Surfaces
Under Laser Excitation"

Leningrad, Fizika i tekhnika poluprovodnikov, No 10, 1972, pp 1936-
1944

Abstract: While investigations of volume recombination processes of current carriers under laser excitation have been made and have yielded important information on the characteristics of local centers and new recombination mechanisms, investigations of surface processes have been limited to low excitation levels. The experiments described in this paper were designed to measure four effects: photoconductivity amplitude and relaxation time; absorption of infrared light by unbalanced current carriers; zone-zone recombination radiation intensity and relaxation; capacitor photo-emf. A block diagram of the experimental equipment is given. A neodymium laser operating at a wavelength of 1.06 microns and a ruby laser at 0.6943 microns, with maximum intensity of 10^{25} kW/cm²·sec, were used to generate the unbalanced current carriers. A signal of 1/2

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UDC: 621.315.592

ZUYEV, V. A., et al, Fizika i tekhnika poluprovodnikov, No 10,
1972, pp 1936-1944

infrared radiation was supplied by a 300 watt incandescent lamp with a germanium filter, and the receiver of the infrared radiation was a low-inertia photoresistance using germanium with a gold impurity. The authors thank O. V. Snitko, D. Pataki, and A. V. Sachenko for their useful comments on a number of problems encountered in the course of this work.

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USSR

SUKACH, K.A.

UDG 621.385.6

"Computation Of The Field Of The Space Charge Of An Electron Stream"

Vestn. Kiyev. politekhn. in-ta. Ser. radiotekhn. elektroakust. (Bulletin Of
Kiev Polytechnical Institute. Radio Engineering Electroacoustics), 1970, No 7, pp
56-61 (from RZh--Elektronika i yeye primeneniye, No 2, February 1971, Abstract No
2A137)

Translation: An account is given of a method of computation of the field of the
space charge of an electron stream with an efficient shape for the cross section.
The computation is conducted with the aid of Green's functions with the stream in
the form of the sum of linear charges. The method described makes it possible to
investigate the internal structure of an electron stream and can be used during
computation of electron-optical systems of microwave devices. 1 ref. Summary.

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USSR

UDC 621.385.622

GUDZENKO, YU. P., SUKACH, K. A.

"Forming Scanning Electron Beams by Periodic Magnetic Fields"

Kiev, Izvestiya VUZ -- Radioelektronika, Vol 13, No 8, 1970, pp 940-947

Abstract: The authors assert that while the formation of axially symmetrical electron beams by periodic magnetic fields has been discussed in many papers, the problem of the formation of deflected electron beams by a periodic magnetic field has been neglected. This article indicates the major possibility for forming deflected beams by such a field and discusses some of the peculiarities of such formation. The authors develop the equations for the trajectory of an electron under the influence of a symmetrical field and an asymmetrical one, under the condition that the longitudinal velocity is constant and that the magnetic field is a function of the longitudinal coordinate in accordance with the expression

$$B = B_0 e^{aZ+gx/p} \cos Z,$$

where B is the instantaneous value of the field, B_0 is the amplitude of the induction field, a is an index determining the rate of the reduction in the field along the longitudinal axis Z , $g = 0$ for a symmetrical field and $g = 1/2$

USSR

GUDZENKO, YU. P., et al., Izvestiya VUZ -- Radioelektronika, Vol 13, No 8, 1970, pp 940-947

for an asymmetrical one. These equations were solved together with the equations for the space-charge field, also derived in this article, on the Razdan-2 digital computer by the Runge-Kutta method. Among other results of the calculations, the authors conclude that the best condition for beam formation by a magnetic field is obtained by reducing the amplitude of the magnetic field along the beam length.

Aeronautical and Space

USSR

UDC 532.525.2.001.5

BUSHMARIN, O. N., SUKACHEV, A. M., YAKOVENKO, V. V.

"Experimental Study of a Twisted Jet Emanating from an Annular Slot at the Base of a Semiinfinite Cylinder"

Trudy Leningradskogo Politekhnicheskogo Instituta, Aerotermodinamika (Works of the Leningrad Polytechnical Institute, Aerothermodynamics), No 313, 1970, pp 143-148

Translation: This article contains a study of the effects of spreading out of a twisted annular jet emanating from a circular nozzle located in the plane at the base of a circular cylinder.

The velocity and pressure fields are measured. The conditions under which spreading out of the jet takes place for various twisting devices are analyzed. There are 2 tables and 4 illustrations.

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UNCLASSIFIED
TITLE--DEVELOPMENT OF AROMATIC HYDROCARBON INDUCED TUMORS OF THE MAMMARY GLAND IN RATS -U-
AUTHOR--(03)--BESKROVNIY, A.M., BRESLAVSKIY, A.S., SUKACHEVA, O.A.
COUNTRY OF INFO--USSR
SOURCE--VOP. ONKOL. 1970, 16(2), 59-63
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--TUMOR, CARCINOGEN, AROMATIC HYDROCARBON, HISTOCHEMISTRY, REPRODUCTIVE SYSTEM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1995/2042
CIRC ACCESSION NO--AP0117285
STEP NO--UR/0506/70/016/002/0059/0063
UNCLASSIFIED

020
CIRC ACCESSION NO--AP0117285 UNCLASSIFIED
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A STUDY WAS MADE OF PATTERNS OF
GROWTH AND HISTOL. STRUCTURE OF TUMORS OF THE AMMMARY GLAND, INDUCED IN
WISTAR FEMALE RATS BY ORAL ADMINISTRATION OF
9,10,DIMETHYL,1,2,BENZ(ALPHA)ANTHRACENE (I). THE TUMORS APPEARED AT
85-90PERCENT OF CASES, IN AN AV. OF 36 DAYS AFTER 3 ADMINISTRATION OF
THE CARCINOGEN. OF 200 CASES, SPONTANEOUS REGRESSION OCCURRED IN 61
WITH COMPLETE DISAPPERANCE OF THE TUMOR IN 29. IN 45 CASES, HOWEVER,
THE REGRESSION WAS TEMPORARY. A DISTINCT DEPENDENCE BETWEEN THE RATE
OF REGRESSION AND THE SIZE OF THE TUMOR WAS FOUND; SMALLER (I.E.,
YOUNGER) TUMORS HAD A HIGH INCIDENCE OF REGRESSION AND DISAPPEARANCE.
WHEN THE TUMOR REACHED A CERTAIN CRIT. SIZE, DISTINCT MALIGNIZATION
OCCURRED, THE TUMORS GREW CONTINUOUSLY AND CAUSED DEATH OF THE ANIMAL.
HISTOL. EXAMNS. SHOWED THAT I INDUCED TUMORS ARE INITIALLY PRECANCEROUS,
AND ONLY BECOME MALIGNANT IN LATER STAGES.
CLIN. UNCOL., MOSCOW, USSR. FACILITY: INST. EXP.

UNCLASSIFIED

USSR

UDC: 534-8

SUKATSKAS, V. and YARONIS, E.

"Interferometer of Constant Length for Measuring the Dispersion of Ultrasonic Velocity in Liquids"

Nauch. tr. vyssh. ucheb. zavedeniy LitSSR. Ul'trazvuk (Scientific Works of the Lithuanian VUZ; Ultrasonics) No 4, 1972, pp 25-32 (from RZh--Fizika, No 4, 1973, Abstract No 4Zh593)

Translation: A variable-frequency differential interferometer with two chambers is described. One of the chambers of constant length is filled with the liquid being investigated; the other is a standard with no ultrasonic velocity dispersion in the investigated frequency range. The frequency intervals corresponding to the specified increase in wave number in the chambers are automatically measured; the velocity dispersion is determined from the values of these intervals. The block diagram of the measuring device is given and the amplifiers (with automatic gain control) designed for the case of low repetition frequency of the resonance peaks are described. Bibliography of 13. Authors' abstract

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USSR

UDC: 577.1:615.7/9

TREGUBENKO, I. P., SUKHACHEVA, Ye. I., BELOVA, M. H., NYATINA, O. A., SEMENOV, G. A., SEMENOV, D. I.

"Effect of Ethylenediaminetetraacetic, Cyclohexylaminetetraacetic and Diethylenetriaminepentaacetic Acid Sodium Salts on the Behavior of Cadmium-115 in an Organism"

Tr. In-ta ekol. rast. i zhivotnykh. Ural'sk. fil. AN SSSR (Works of the Institute of Plant and Animal Ecology. Ural Affiliate, Academy of Sciences of the USSR), 1970, vyp. 68, pp 65-67 (from RZh-Biologicheskaya Khimiya, No 23, 10 Dec 70, Abs'ract No 23F2208)

Translation: The cadmium complex with ethylenediaminetetraacetic acid sodium salt is partially dissociated under conditions in the organism, whereas cadmium complexes with cyclohexylaminetetraacetic and diethylenetriaminepentaacetic acid sodium salts, which have higher constants of stability, are almost completely eliminated from the organism of rats within the first few days. Early application of the complexing agents appreciably reduces the deposition of cadmium in the tissues, and increases its elimination with

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USSR

TREGUBENKO, I. P., et al., Tr. In-ta ekol. rast. i zhivotnykh. Ural'sk. fil. AN SSSR, 1970, vyp. 68, pp 65-67

urine. Diethylenetriaminopentaacetic acid sodium salt has the most pronounced effect. Stable complexes of cadmium-115 are eliminated almost entirely through the kidneys, part of the isotope being selectively retained in the kidneys (23-48 percent of the residue in the organism), which may be utilized for irradiation of kidney tumors. From the authors' resume.

USSR

UDC: 577.1:615.7/9

TREGUBENKO, I. P., SEMENOV, D. I., SUKHACHEVA, Ye. I., MENOVSHIKOVA, G. A.,
BELOVA, M. N., TARAKHTIY, E. A.

"Accessibility of Radioactive Cerium for Extraction From an Organism by
Diethylenetriaminepentaacetic Acid. Relationship Between the Quantity
Extracted and That Contained in the Organism"

Tr. In-ta ekol. rast. i zhivotnykh. Ural'sk. fil. AN SSSR (Works of the
Institute of Animal and Plant Ecology. Ural Affiliate, Academy of Sciences
of the USSR), 1970, vyp. 68, pp 81-86 (from RZh-Biologicheskaya Khimiya,
No 23, 10 Dec 70, Abstract No 23F2204)

Translation: The amount of cerium-144 extracted by the complexing agent in
the daily urine of rats amounts to $\frac{1}{10}$ of the quantity of the isotope con-
tained in all soft tissues (the cerium in the skeleton does not participate
in this process). This is the actual ratio for various periods after using
the complexing agent (from the 8-th to the 126-th day of the experiment) in
a dose of 100 μ moles in a rat. Repeated injection of the complexing agent
does not change this ratio when the cerium extracted with the first injec-
tion is taken into account. From the authors' resumé.

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USSR

UDC: 577.1:615.7/9

TREGUBENKO, I. P., SEMENOV, D. I., SUKHACHEVA, Ye. I., MEN'SHENOVA, G. A.,
BELOVA, M. N.

"Accessibility of Yttrium-91 Deposited in the Tissues of an Organism for
Diethylenetriaminepentaacetic Acid Sodium Salt"

Tr. In-ta ekol. rast. i zhivotnykh. Ural'sk. fil. AN SSSR (Works of the
Institute of Animal and Plant Ecology. Ural Affiliate, Academy of Sciences
of the USSR), 1970, vyp. 68, pp 87-94 (from RZh-Biologicheskaya Khimiya,
No 23, 10 Dec 70, Abstract No 23R2206)

Translation: The paper demonstrates the parallelism between the effective-
ness of diethylenetriaminepentaacetic acid sodium salt and the concentration
of yttrium-91 in the kidneys and liver. M. Sh.

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USSR

GUS'KOVA, V. N., BRAGINA, A. N., ZASEDATELST, A. A., YU. V. A. N., KUPRIYANOVA, V. N., MASHNEVA, N. I., RODIONOVA, L. F., SHEL'SKAYA, S. Ya., and TIKHONOVA, A. I., Leningrad Scientific Research Institute of Radiation Hygiene, Ministry of Health RSFSR

UDC 571.472.414+577.191

"Effect of a Mixture of Uranium Fission Products on Sanitary Conditions and Hydrobionts in Weakly Mineralized Bodies of Fresh Water"

Kiev, Gidrobiologicheskii Zhurnal, Vol 6, No 4, Jul/Aug 70, pp 5-11

Abstract: Pollution of water with two mixtures of radioactive substances, mixture I, 52% rare earth radioisotopes and 20% alkali earth rare earth radioisotopes, and mixture II, 40% zirconium 95 and niobium 95) to 1.0·10⁻⁵ curie/liter was studied. The substances did not affect the sanitary conditions or the hydrobionts. The concentrations ranging from 1.0·10⁻³ to 1.0·10⁻⁵ curie/liter. Biochemical oxygen demand and development of algae, Infusoria, duckweed). The rate of accumulation decreased from the lowest link (microorganisms) to the highest (fish). Adverse effects of the radioisotopes on developing fish spawn varied with the stage of

UDC: 534-8

USSR

SUKATSKAS, V. and YARONIS, E.

"Interferometer of Constant Length for Measuring the Dispersion of Ultrasonic Velocity in Liquids"

Nauch. tr. vyssh. ucheb. zavedeniy LitSSR. Ul'trazvuk (Scientific Works of the Lithuanian VUZ; Ultrasonics) No 4, 1972, pp 25-32 (from RZh--Fizika, No 4, 1973, Abstract No 4Zh593)

Translation: A variable-frequency differential interferometer with two chambers is described. One of the chambers of constant length is filled with the liquid being investigated; the other is a standard with no ultrasonic velocity dispersion in the investigated frequency range. The frequency intervals corresponding to the specified increase in wave number in the chambers are automatically measured; the velocity dispersion is determined from the values of these intervals. The block diagram of the measuring device is given and the amplifiers (with automatic gain control) designed for the case of low repetition frequency of the resonance peaks are described. Bibliography of 13. Authors' abstract

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UDC: 577.1:615.7/9

USSR

TREGUBENKO, I. P., SUKHACHEVA, Ye. I., BELOVA, M. N., NYATINA, O. A., MEN'-SHIKOVA, G. A., SEMENOV, D. I.

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USSR

TREGUBENKO, I. P., et al., Tr. In-ta ekol. rast. i zhivotnykh. Ural'sk.
fil. AN SSSR, 1970, vyp. 68, pp 65-67

urine. Diethylenetriaminepentaacetic acid sodium salt has the most pronounced effect. Stable complexes of cadmium-115 are eliminated almost entirely through the kidneys, part of the isotope being selectively retained in the kidneys (23-48 percent of the residue in the organism), which may be utilized for irradiation of kidney tumors. From the authors' resumé.

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USSR

UDC: 577.1:615.7/9

TREGUBENKO, I. P., SEMENOV, D. I., ~~SUKHACHEVA, Ye. I.~~ MENOSHKOVA, G. A.,
BELOVA, M. N., TARAKHTIY, E. A.

"Accessibility of Radioactive Cerium for Extraction From an Organism by Diethylenetriaminepentaacetic Acid. Relationship Between the Quantity Extracted and That Contained in the Organism"

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USSR

UDC: 577.1:615.7/9

TREGUBENKO, I. P., SEMENOV, D. I., SUKHACHEVA, Ye. I., MEN'SHIKOVA, G. A.,
BELOVA, M. N.

"Accessibility of Yttrium-91 Deposited in the Tissues of an Organism for
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Tr. In-ta ekol. rast. i zhivotnykh. Ural'sk. fil. AN SSSR (Works of the
Institute of Animal and Plant Ecology. Ural Affiliate, Academy of Sciences
of the USSR), 1970, vyp. 58, pp 67-94 (from RZh-Biologicheskaya Khimiya,
No 23, 10 Dec 70, Abstract No 23V2206)

Translation: The paper demonstrates the parallelism between the effective-
ness of diethylenetriaminepentaacetic acid sodium salt and the concentration
of yttrium-91 in the kidneys and liver. M. Sh.

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UDC 577.472.614+577.391

USSR

GUS'KOVA, V. N., BRAGINA, A. N., ZASEDATEL'EV, A. A., IL'IN, B. N., KUPRIYANOVA, V. M., MASHNEVA, N. I., RODIONOVA, L. F., SUKAL'SKAYA, S. Ya., and TIKHONOVA, A. I., Leningrad Scientific Research Institute of Radiation Hygiene, Ministry of Health RSFSR

"Effect of a Mixture of Uranium Fission Products on Sanitary Conditions and Hydrobionts in Weakly Mineralized Bodies of Fresh Water"

Kiev, Gidrobiologicheskii Zhurnal, Vol 6, No 4, Jul/Aug 70, pp 5-11

Abstract: Pollution of water with two mixtures of radionuclides (mixture I, 52% rare earth radioisotopes and 20% alkali earth elements; mixture II, 40% rare earth radioisotopes and approximately 34% zirconium 95 and niobium 95) at concentrations ranging from $2.0 \cdot 10^{-7}$ to $1.0 \cdot 10^{-5}$ curie/liter was studied. The substances did not affect the sanitary conditions or the hydrobionts studied (E. coli, protococcal algae, Infusoria, duckweed). Biochemical oxygen demand and development of saprophytic mycoflora were inhibited only at concentrations above $1.0 \cdot 10^{-3}$ curie/liter. The rate of accumulation decreased from the lowest link (microorganisms) to the highest (fish). Adverse effects of the radioisotopes on developing fish spawn varied with the stage of

USSR

GUS'KOVA, V. N., et al, Gidrobiologicheskii Zhurnal, Vol 6, No 4, Jul/Aug 70,
pp 5-11

development. Effects were evident in the early stages of embryogenesis at a
concentration of $1 \cdot 10^{-5}$ curie/liter and in later stages at $1.0 \cdot 10^{-3}$ curie/
liter.

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USSR

UDC: 621.372.413(088.8)

STEKLOV, L. V., SUKAZOV, E. A. MAKAROVA, L. P.

"A Coaxial Tank Circuit"

USSR Author's Certificate No 265981, filed 2 Jan 68, published 2 Jul 70
(from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1B170 P)

Translation: A tank circuit is proposed which contains a movable shorting plunger, a ferrite tuning element and a solenoid. To increase the effectiveness of the control system, an additional ferrite core is included which is coaxial with the ferrite element in the space behind the plunger.

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USSR

FIL'CHAKOV, Corresponding Member of the Ukrainian Academy of Sciences P. F.;
SUKENNYK, A. A. (Institute of Mathematics, Ukrainian Academy of Sciences)

"Determining the Eigenvalues of One-Parameter Problems by the Power Series Method"

Kiev, Dopovidi Akademii Nauk Ukrain's'koi RSR: Seriya A - Fizyko-Tekhnichni ta Matematychni Nauky; October, 1971; pp 891-4

ABSTRACT: The article concerns the problem of eigenvalues for the differential

equation

$$y^{(n)} + P_1(x, \lambda) y^{(n-1)} + \dots + P_n(x, \lambda) y = P(x, \lambda), \quad (1)$$

with boundary conditions $\sum_{k=0}^{n-1} \alpha_{ki} y^{(k)}(a) + \sum_{k=0}^{n-1} \beta_{ki} y^{(k)}(b) = \gamma_i \quad (i = 1, 2, 3, \dots, m \geq n), \quad (2)$

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USSR

FIL'CHAKOV, P. F. and SUKENNIK, A. A., Dopovidi Akademii Nauk Ukrain's'koi RSR: Seriya A - Fizyko-Tekhnichni ta Matematychni Nauky, October 1971, pp 891-894

where the coefficients α_{ki} , β_{ki} also can depend on λ . The solution of differential equations (1) is sought in the form of the power series

$$y = \sum_{v=0}^{\infty} a_v (x - x_0)^v. \quad (3)$$

By means of equations (2) and (3) the authors obtain an infinite system of algebraic equations which determines the coefficients $a_0, a_1, a_2, \dots, a_{n-1}$ and the parameter λ . The method of calculation is illustrated by examples.

There are two references.

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- 7 -

Acc. Nr:

70045328

Abstracting Service: 5/70
INTERNAT. AEROSPACE ABST.

Ref. Code:

LR0441

A70-23383 # On one method for solution of a point boundary value problem for calculating system of differential equations with parameters (Pro udin metod roav'iazuvannia tochkovoi kraiovoi zadachi dlia zchislennoi sistemi diferentsial'nikh rivnian' z parametrami). A. A. Martiniuk and A. A. Sukennik (Akademiia Nauk Ukrains'koi RSR Institut Matematicheskoi Ukrainian SSR). *Akademiia Nauk Ukrains'koi RSR, Dopovidi, Seriya A-Fiziko-Tekhnichni i Matematichni Nauki*, vol. 32, Jan. 1970, p. 17-20. 5 refs. In Ukrainian.

The solution of a boundary value problem for a system of differential equations with parameters is found in the form of power series. Recurrent ratios are established to find the coefficients of these series. Estimations of initial values and parameters are given for the Cauchy problem considered in connection with the boundary value problem, with which its solutions possess a stability property at the finite interval with respect to the boundary value problem solutions.

(Author)

A43

21

REEL/FRAME
19780252

USSR

UDC 612.35.017.1

SUKERNIK, R. I., SKVORTSOVA, T. A., LEONT'YEVA, L. I., and LADYGIN, V. I.,
Central Scientific Research Laboratory, Novosibirsk Medical Institute

"Induction of Auto-Immune Cellular Response to Liver Cells in Mice by
Implantation of Spleen Cells From Syngenic Donors With Toxic Hepatitis"
Leningrad, Tsitologiya, Vol 13, No 5, May 71, pp 636-643

Abstract: The effect of lymphoid spleen cells from donor mice, after repeated treatment with CCl_4 , on the liver parenchyma was studied. Both the eight control and the 12 test animals (CBA strain) were given H^3 -thymidine intraabdominally over a period of 6 days, thrice daily. Toxic hepatitis was produced by CCl_4 inhalation. The animals were sacrificed 16-20 hours after the last CCl_4 inhalation and 9-10 hours after the last H^3 -thymidine injection. The spleens were removed, ground and cell suspensions prepared for implantation. The recipients were sacrificed 58 hours after the transfer and their liver, spleen, and inguinal lymph nodes removed and studied. Spleen cells from test and control donor mice were transfused in a dose of 25×10^6 into normal recipient mice and into mice which were subjected to a single CCl_4 intoxication immediately after the transfusion. This led to stimulation of DNA synthesis and to reutilization of labelled products of regenerating

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SUKERNIK, R. I., et al., Tsitologiya, Vol 13, No 5, May 71, pp 636-643

hepatocytes. Cytophotometric examination and evaluation of DNA in hepatocyte nuclei of recipients injected with spleen cells obtained from test donors showed that the number of tetraploid and octoploid nuclei had slightly increased. The activated DNA synthesis is considered a response of the liver cells which had been attacked by cell-bound auto-antibodies transferred in the spleen cells from CCl_4 -treated donor mice. Histograms are shown.

2/2

- 45 -

Acc. Nr.: **AP0031624**

Ref. Code: UR 0219

PRIMARY SOURCE: Byulleten' Eksperimental'noy Biologii i
Meditsiny, 1970, Vol. 69, Nr 1, pp 68-71

QUANTITATIVE STUDY OF THE EFFECT PRODUCED BY THE BLOOD PLASMA
LYMPHOCYTES OF PATIENTS WITH RHEUMATOID ARTHRITIS ON EMBRYONAL
HUMAN FIBROBLASTS IN VITRO

Sukernik, R.I.; Skorova, S.V.; Kaznacheev, V.P.
Novosibirsk Medical Institute

In in vitro culture blood lymphocytes of patients with rheumatoid arthritis exert
cytopathic action on the fibroblasts of human embryos. The patients' blood serum was
incapable to destroy the fibroblasts. This corroborates and broadens initial morphological
observations in analogous in vitro systems in which the presence in rheumatoid
arthritis of cellular immunological reactions directed against the connective tissue were
demonstrated.

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"APPROVED FOR RELEASE: 08/09/2001

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CIA-RDP86-00513R002203210017-3"

USSR

UDC: 621.372.413(088.8)

STEKLOV, L. V., SUKASOV, V. A. MAKAROVA, L. P.,

"A Coaxial Tank Circuit"

USSR Author's Certificate No 265981, filed 2 Jan 63, published 2 Jul 70
(from H2A-Radiotekhnika, No 1, Jan 71, Abstract No 13130 P)

Translation: A tank circuit is prepared which contains a movable shorting
plunger, a ferrite tuning element and a solenoid. To improve the effec-
tiveness of the control system, an additional ferrite core is included which
is coaxial with the ferrite element in the space behind the plunger.

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USSR

FIL'CHAKOV, Corresponding Member of the Ukrainian Academy of Sciences P. F.;
SUKENNYK, A. A. (Institute of Mathematics, Ukrainian Academy of Sciences)

"Determining the Eigenvalues of One-Parameter Problems by the Power Series
 Method"

Kiev, Dopovidi Akademii Nauk Ukrain's'koj RSR: Seriya A - Fizyko-matematichni ta
 Matematychni Nauky; October, 1971; pp 891-4

ABSTRACT: The article concerns the problem of eigenvalues for the differential
 equation

$$y^{(n)} + P_1(x, \lambda)y^{(n-1)} + \dots + P_n(x, \lambda)y = P(x, \lambda). \quad (1)$$

$$\sum_{k=0}^n a_k y^{(k)}(x) + \sum_{k=0}^{n-1} b_k y^{(k)}(x) = \gamma_i \quad (i = 1, 2, \dots, m; x \in \pi) \quad (2)$$

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USSR

FIL'CHAKOV, P. F. and SUKENNIK, A. A., *Dopovidi Akademii Nauk Ukrain's'koi RSR: Seriya A - Fizyko-Tekhnichni ta Matematychni Nauky*, October 1971, pp 891-894

where the coefficients α_{ki} , β_{ki} also can depend on λ . The solution of differential equations (1) is sought in the form of the power series

$$y = \sum_{v=0}^{\infty} a_v (x - x_1)^v. \quad (3)$$

By means of equations (2) and (3) the authors obtain an infinite system of algebraic equations which determines the coefficients $a_0, a_1, a_2, \dots, a_{n-1}$ and the parameter λ . The method of calculation is illustrated by examples. There are two references.

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- 7 -

A/0045328

Abstracting Service: 5/70
INTERNAT. AEROSPACE ABST.

Ref. Code:
LR0441

A70-23383 # On one method for solution of a point boundary value problem for calculating system of differential equations with parameters (Pro odin metod rosv'iazuvannia tochkovoi kraiovoi zadachi dlia zchislennoi sistemi diferentsial'nikh rivnian' z parametrami). A. A. Martiniuk and A. A. Sukernik (Akademiia Nauk Ukrain's'koi RSR, Institut Matematicheskoi Ukrainian SSR). Akademiia Nauk Ukrain's'koi RSR, Dopovidi, Seriya 17-20. 5 refs. In Ukrainian.

The solution of a boundary value problem for a system of differential equations with parameters is found in the form of power series. Recurrent ratios are established to find the coefficients of these series. Estimations of initial values and parameters are given for the Cauchy problem considered in connection with the boundary value problem, with which its solutions possess a stability property at the finite interval with respect to the boundary value problem solutions.

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SUKERNIK, R. I., SKVORTSOVA, T. A., LEONT'YEVA, L. I., and LADYGIN, V. I.,
Central Scientific Research Laboratory, Novosibirsk Medical Institute

"Induction of Auto-Immune Cellular Response to Liver Cells in Mice by
Implantation of Spleen Cells From Syngenic Donors With Toxic Hepatitis"
Leningrad, Tsitologiya, Vol 13, No 5, May 71, pp 636-643

Abstract: The effect of lymphoid spleen cells from donor mice, after repeated treatment with CCl_4 , on the liver parenchyma was studied. Both the eight control and the 12 test animals (CBA strain) were given H^3 -thymidine intraabdominally over a period of 6 days, thrice daily. Toxic hepatitis was produced by CCl_4 inhalation. The animals were sacrificed 16-20 hours after the last CCl_4 inhalation and 9-10 hours after the last H^3 -thymidine injection. The spleens were removed, ground and cell suspensions prepared for implantation. The recipients were sacrificed 58 hours after the transfer and their liver, spleen, and inguinal lymph nodes removed and studied. Spleen cells from test and control donor mice were transfused in a dose of 25×10^6 into normal recipient mice and into mice which were subjected to a single CCl_4 intoxication immediately after the transfusion. This led to stimulation of DNA synthesis and to reutilization of labelled products of regenerating

USSR

SUKERNIK, R. I., et al., Tsitologiya, Vol 13, No 5, May 71, pp 636-643

hepatocytes. Cytophotometric examination and evaluation of DNA in hepatocyte nuclei of recipients injected with spleen cells obtained from test donors showed that the number of tetraploid and octoploid nuclei had slightly increased. The activated DNA synthesis is considered a response of the liver cells which had been attacked by cell-bound auto-antibodies transferred in the spleen cells from CCl₄-treated donor mice. Histograms are shown.

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- 45 -

0031624

Ref. Code: UR 0219

PRIMARY SOURCE: Byulleten' Eksperimental'noy Biologii i
Meditsiny, 1970, Vol 69, Nr 1, pp 68-71

QUANTITATIVE STUDY OF THE EFFECT PRODUCED BY THE BLOOD PLASMA
LYMPHOCYTES OF PATIENTS WITH RHEUMATOID ARTHRITIS ON EMBRYONAL
HUMAN FIBROBLASTS IN VITRO

Sukernik, R.I.; Skorova, S.V.; Kaznachev, V.P.
Novosibirsk Medical Institute

In in vitro culture blood lymphocytes of patients with rheumatoid arthritis exert
cytopathic action on the fibroblasts of human embryos. The patients' blood serum was
incapable to destroy the fibroblasts. This corroborates and broadens initial morphological
observations in analogous in vitro systems in which the presence in rheumatoid
arthritis of cellular immunological reactions directed against the connective tissue were
demonstrated.

REEL/FRA

19691751

2 MK

USSR

UDC 621.791.3:539.219.3:669.295:621.762

SUKHACHEV, A. P., Engineer, and LASHKO, S. V., Doctor of Technical Sciences
"Metal Ceramic Diffusion Soldering of Titanium and Its Alloys"

Moscow, Svarochnoye Proizvodstvo, No 6, 1971, pp 54-55

Abstract: Soldered butt joints of titanium and its alloys with strength factors of over 90% can be produced by contact reactive diffusion soldering using copper, copper-nickel, or copper-zirconium coatings. However, the holding time for this method is 1-2 hours, and the surfaces to be soldered must be carefully finished and firmly compressed, making the process more expensive. All of these difficulties can be eliminated by using metal ceramic solders. An optimal composition of metal ceramic solder and optimal soldering mode for type OT4 titanium alloys is selected. The optimal soldering mode is 1,150°C, 15 minutes, plus annealing at 960°C, 60 minutes, specific pressure 40 g/mm², heating rate 4-8° per minute to 900°C, then 12-16° per minute thereafter. The optimal solder composition is 50% copper-zirconium eutectic and 50% titanium.

1/1

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USSR

SUKHACHEV, V.S.

UDC 681.335.8

"Functional Converter for Variable Voltage"

USSR Author's Certificate No. 273533, Filed 24/01/68, Published 14/09/70 (Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No. 4, 1971, Abstract No. 4B119P).

Translation: Functional AC converters containing ballast resistors, shunted by nonlinear diode circuits, and controlled by a voltage divider, are well known. Their defects include low accuracy of conversion and complexity of design. The functional converter suggested differs as follows: The shunting circuits are connected in parallel to one of the ballast resistors through a step-up transformer. Each circuit contains two diodes connected to each other at like terminals and a resistor, one end of which is connected to the common point connecting the diodes, while the other is connected to the reference voltage divider. This increases the accuracy of operation and simplifies the design of the converters. 1 fig.

1/1

USSR

UDC: 577.1:615.7/9

VORONINA, N. M., TREGUBENKO, I. P., LATOSH, N. I., SIKHACHOVA, Ye. I.,
SEMENOV, D. I.

"Effect of Complexing Agents (Iminodiacetate Derivatives of the Oxytriphenylmethane Series) on the Behavior of Iron-59, Zinc-65, Strontium-90, Yttrium-91 and Cerium-144 in an Organism"

Tr. In-ta skol. rast. i zhivotnykh. Ural'sk. fil. AN SSSR (Works of the Institute of Animal and Plant Ecology. Ural Affiliate, Academy of Sciences of the USSR), 1970, Wp. 68, pp 68-75 (from BZh-Biologicheskaya Khimiya, No 23, 10 Dec 70, Abstract No 23F2205)

Translation: The effectiveness of the complexing agents (amount of extraction of yttrium and cerium from the organism and the degree of reduction of their deposition in tissues) increases symbatically with the increase in the number of iminodiacetate groups in the molecule. With respect to their effectiveness, preparations with three and four groups are therapeutically on a level with ethylenediaminetetraacetic acid sodium salt (data from experiments with yttrium), and in some instances (experiments with cerium) are considerably more effective. From the authors' resumé.

1/1

"APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R002203210017-3

AMINES -U- UNCLASSIFIED
AUTHOR-(021)-PYATNITSKY, I.V., SUKHAN, V.V. PROCESSING DATE--30OCT70
COUNTRY OF INFO--USSR N-ENANTHIC ACID IN THE PRESENCE
SOURCE--UKRAIN. KHIM. ZHUR., JAN 1970, 36, (1), 97-98
DATE PUBLISHED---JAN70
SUBJECT AREAS--CHEMISTRY, MATERIALS
TOPIC TAGS--METAL PHOTOMETRIC ANALYSIS, HYDROLYSIS, IRON, COBALT, COPPER,
TITANIUM, METAL CHEMICAL ANALYSIS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1996/2000
CIRC ACCESSION NO--AP0118959
STEP NO--UR/0073/70/036/001/0097/0098
UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R002203210017-3"

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PROBLEMS ARISING IN THE EXTRACTION
OF CERTAIN METALS (FE, CO, CU, TI) BY N-ENANTHIC ACID ARE DISCUSSED.
THUS IN THE ORDINARY TECHNIQUE THERE IS A CONSIDERABLE DEGREE OF
HYDROLYSIS. THE INTRODUCTION OF VARIOUS AMINES PREVENTS THE FORMATION
OF THE HYDROXIDES OF THE METALS AND IMPROVES THE QUALITY OF THE
EXTRACTION. MOREOVER, EXTRACTION WITH ENAN. IC ACID IN THE PRESENCE OF
CERTAIN AMINES MAY BE DIRECTLY EXPLOITED IN THE EXTRACTION PHOTOMETRIC
DETERMINATION OF THE METALS.

UNCLASSIFIED

"APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R002203210017-3

UNCLASSIFIED
POLAROGRAPHIC DETERMINATION OF SOME METALS -U-
PROCESSING DATE--30OCT70
AUTHOR--(02)--PROSYANIK, N.S., SUKHAN, V.V.
COUNTRY OF INFO--USSR
SOURCE--UKR. KHIM. ZH. 1970, 36(1), 95-7
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, CHEMISTRY
TOPIC TAGS--CADMIUM SULFIDE, POLAROGRAPHIC ANALYSIS, TRACE ANALYSIS,
COPPER, MERCURY, SILVER
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1996/1998
CIRC ACCESSION NO--AP0118957
STEP NO--UR/0073/70/036/001/0095/0097
UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R002203210017-3"

ACCESSION NO--AP0118957 UNCLASSIFIED
ABSTRACT/EXTRACT--(U) GP-6- ABSTRACT. SMALL AMTS. OF CU PRIME POSITIVE
POSITIVE, AND AG PRIME POSITIVE IN SOLN. CAN BE SATISFACTORILY DETD. BY
SHAKING THE SOLN. WITH CDS FOLLOWED BY POLAROGRAPHIC DETN. OF THE CO
PRIME POSITIVE POSITIVE RELEASED INTO SOLN. BY METATHESIS.
FACILITY: KIEV. GOS. UNIV. IM. SHEVCHENKO, KIEV, USSR.

PROCESSING DATE--30OCT70

UNCLASSIFIED

"APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R002203210017-3

UNCLASSIFIED
DISPERSION APPROACH -U-
AUTHOR--(03)-PAVLOV, V.P., SVECHNIKOV, S.V., SUKHANOV, A.D.
PROCESSING DATE--13NOV70
COUNTRY OF INFO--USSR
SOURCE--TEORETICHESKAYA I MATEMATICHESKAYA FIZIKA, 1970, VOL 3, NR 1, PP
57-71
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--ELECTRODYNAMICS, VECTOR FUNCTION, WAVE FUNCTION, DISPERSION
EQUATION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3003/1018
CIRC ACCESSION NO--AP0130053
STEP NO--UR/0646/70/003/001/0057/0071
UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R002203210017-3"

U18
CIRC ACCESSION NO--AP0130053 UNCLASSIFIED
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DYNAMICAL APPARATUS OF
DISPERSION APPROACH IS APPLIED SUCCESSIVELY TO THE SCALAR
ELECTRODYNAMICS AND THE THEORY OF MASSIVE NEUTRAL VECTOR FIELD. THE
EFFECTS OF WAVE FUNCTION RENORMALIZATION AND THEIR INFLUENCE UPON THE
HEISENBERG CURRENT HERMICITY ARE TAKEN INTO ACCOUNT. THE HIGHER CURRENT
LIKE OPERATORS ARE FOUND AND THE EQUAL TIME COMMUTATORS OF HEISENBERG
FIELDS AND CURRENTS ARE CONSTRUCTED. THE RESULTS OBTAINED ARE IN FULL
ACCORDANCE WITH THE SPECTRAL REPRESENTATION CONSEQUENCES WHEN USING THE
GAUGE INVARIANCE REQUIREMENT AT ALL STAGES. FACILITY:
MATEMATICHESKIY INSTITUT IM. V. A. STEKLOVA AKADEMII NAUK SSSR.

PROCESSING DATE--13NOV70

UNCLASSIFIED

"APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R002203210017-3

UNCLASSIFIED
INVARINCE AND REGULARIZATION -U-
PROCESSING DATE--20NOV70
AUTHOR--(03)--MEDVEDYEV, B.V., PAVLOV, V.P., SUKHANOV, A.D.
COUNTRY OF INFO--USSR
SOURCE--ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58,
NR 6, PP 2099-2109
DATE PUBLISHED--70
SUBJECT AREAS--MATHEMATICAL SCIENCES
TOPIC TAGS--PAULI EXCLUSION PRINCIPLE, PERTURBATION THEORY, INTEGRAL
FUNCTION, INTEGRAL CALCULUS
CENTRCL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1998/0534
CIRC ACCESSION NO--AP0121206
STEP NO--UR/0056/70/058/006/2099/2109
UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R002203210017-3"

ACCESSION NO--AP0121206 UNCLASSIFIED
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IT IS SHOWN THAT PAULI-WILLARS
REGULARIZATION REQUIRED FOR CONSERVATION OF GAUGE INVARIANCE AT ALL
CALCULATION STAGES IN PERTURBATION THEORY POSSESSES SOME SINGULAR
PROPERTIES. THIS INTEGRALS OF POSITIVELY DEFINITE FUNCTIONS,
CONVERGING AS WELL AS DIVERGING, ARE MADE TO VANISH; MOREOVER IT LEADS
TO DISCONTINUITIES IN THE REGULAR PARTS OF DIVERGING DIAGRAMS. THE
PHYSICAL MEANING OF THE PAULI-WILLARS PROCEDURE IS DISCUSSED, AND THE
POSSIBILITY OF EXTENDING THE PROCEDURE IN SUCH A WAY AS TO MAKE THE
DIVERGENT PARTS OF ALL DIAGRAMS VANISH IS DISCUSSED.
MATEMATICHESKIY INSTITUT IM. STEKLOVA AN SSSR. FACILITY:
PROCESSING DA E--20NOV70

UNCLASSIFIED

"APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R002203210017-3

UNCLASSIFIED
SYMMETRY INVARIANCE AND REGULARIZATION -U-

PROCESSING DATE--27NOV70

AUTHOR--(03)--MEDVEDEV, B.V., PAVLOV, V.P., SUKHANOV, A.D.

COUNTRY OF INFO--USSR

SOURCE--ITE 70 15 CONF 691035 7. DEP. CPSTI FROM CONFERENCE ON HIGH ENERGY
PHYSICS AND THEORY OF ELEMENTARY PARTICLES, KIEV, USSR

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--PERTUBATION METHOD, ACCURACY STANDARD, CONVERGENT SERIES

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3001/1582

GTIC ACCESSION NO--AT0127078

STEP NO--UR/0000/70/000/000/0010/0019

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R002203210017-3"

ACCESSION NO--AT0127078 UNCLASSIFIED
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IT IS SHOWN THAT PAULI VILLARS
REGULARIZATION, IN WHICH ONE NEEDS TO PRESERVE THE GAUGE INVARIANCE AT
ALL THE STAGES OF THE PERTURBATIVE CALCULATIONS, HAS THE UNUSUAL
PROPERTIES. THE VALUES OF THE CONVERGENT INTEGRALS OF POSITIVE DEFINITE
FUNCTIONS AS WELL AS OF DIVERGENT ONES VANISH UNDER THIS REGULARIZATION,
AND THE DISCONTINUITIES ARISE IN THE REGULAR PARTS OF DIVERGENT GRAPHS.
THE PHYSICAL SENSE OF PAULI VILLARS PROCEDURE AND POSSIBILITY OF
VANISHING OF DIVERGENT PARTS OF ALL THE GRAPHS ARE DISCUSSED.
FIZIKI. AKADEMIYA NAUK UKRAINSKOI SSR, KIEV. INSTITUT TEORETICHESKOI

PROCESSING DATE--27NOV70

UNCLASSIFIED

"APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R002203210017-3

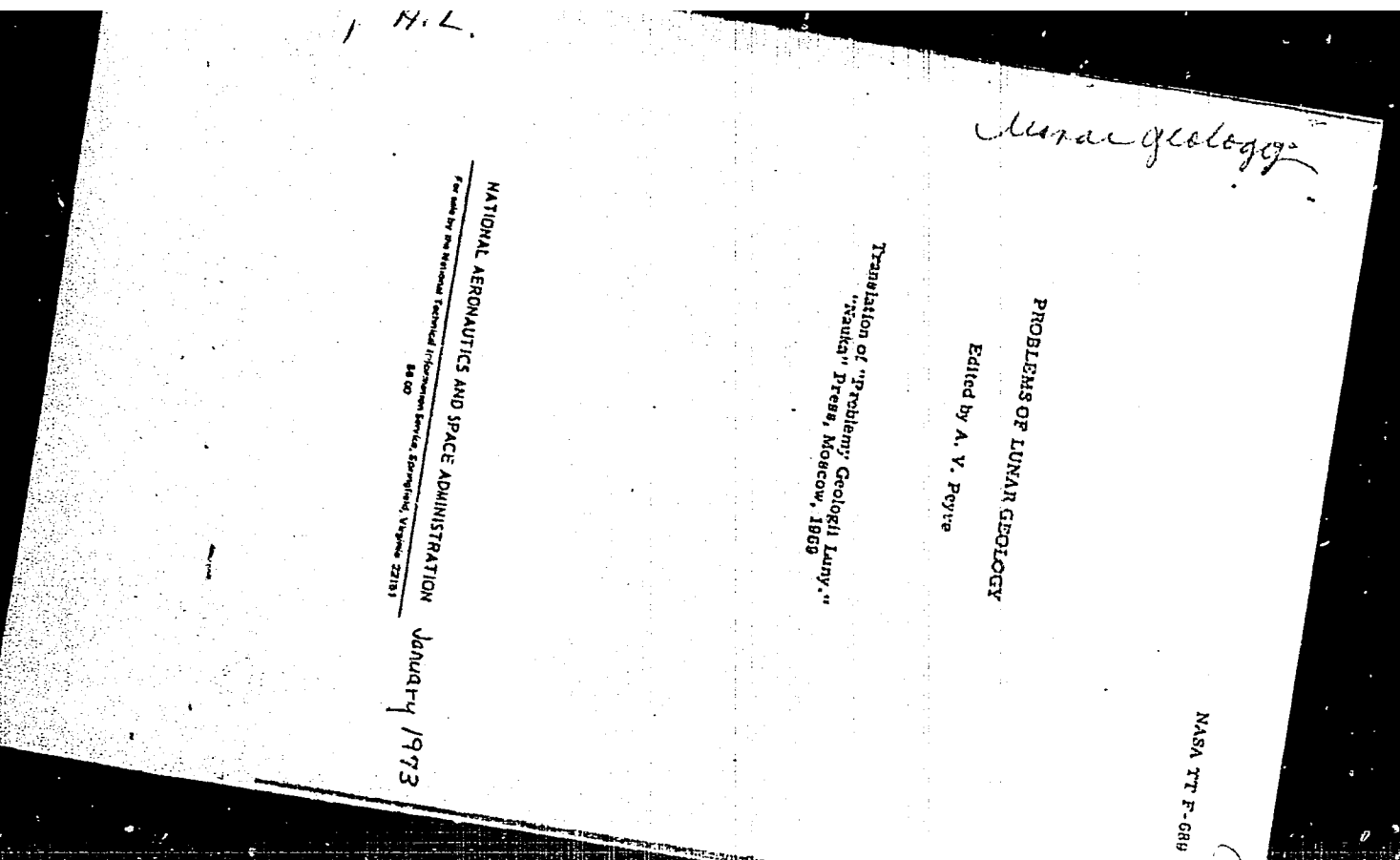
UNCLASSIFIED
Gauge Non Invariant Formulation of the Quantum Electrodynamics with
AUTHOR--(02)--PAVLOV, V.P., SUKHANOV, A.D.
COUNTRY OF INFO--USSR
SOURCE--(ITF,70,16) (CONF,691035,8). DEP. CFSTI FROM CONFERENCE ON HIGH
ENERGY PHYSICS AND THEORY OF ELEMENTARY PARTICLES, KIEV, USSR
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--HAMILTONIAN, QUANTUM ELECTRODYNAMICS, SPINOR, ELECTROMAGNETIC
FIELD
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3001/1583
CIRC ACCESSION NO--AT0127079
STEP NO--UR/0000/70/000/000/0009/0009
UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R002203210017-3"

8
CIRC ACCESSION NO--ATO127079 UNCLASSIFIED
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE INTERACTION HAMILTONIAN IN THE
INTERACTION REPRESENTATION IS CONSTRUCTED FOR QUANTUM ELECTRODYNAMICS
WITHIN THE SECOND ORDER IN CHARGE IN THE GAUGE NONINVARIANT
REGULARIZATION CASE, WHEN ONE NEEDS TO TAKE INTO ACCOUNT THE PHOTON MASS
RENORMALIZATION COUNTER TERM. IT IS SHOWN, THAT ONE MAY NOT CONFIN
ONESELF TO WICK THEOREM WITH ONLY PAIR CONCENTRATIONS OF THE SPINOR
FIELDS IN THIS CASE. THERE IS AN ADDITIONAL NONINVARIANT TERM IN THE
HAMILTONIAN, WHICH CORRESPONDS TO THE DIFFERENCE BETWEEN THE WICK AND
DYSON TAU PRODUCTS OF ELECTROMAGNETIC CURRENTS; THIS DIFFERENCE DOES NOT
VANISH UNDER GAUGE NONINVARIANT REGULARIZATION. FACILITY:
AKADEMIYA NAUK UKRAINSKOI SSR, KIEV. INSTITUT TEORETICHESKOI FIZIKI.

UNCLASSIFIED



ABSTRACTS

TECHNIQUE OF MAPPING AND A LEGEND FOR GEOLOGICAL-
MORPHOLOGICAL MAPS OF THE MOON ON A SCALE OF
1:1,000,000

NC A. I. Subbotov
V. G. Filinov

ABSTRACT. A methodology is developed for interpreting
telescopic and other pictures of the lunar surface for the
purpose of indicating rock composition and structure of the
various ages on geological maps. The classification of the
features according to age is discussed, as well as
morphological signs.

THE THICKNESS OF THE REGOLITH COMPLEX

NC A. I. Subbotov
V. G. Filinov

ABSTRACT. Lunar crater models of various authors
are discussed. These include models of various authors
in the Moon's development. Curves between crater
depths and crater diameter are developed.

VII

EXPLANATORY NOTES FOR THE GEOLOGICAL-MORPHOLOGICAL CHARTS
OF THE REGION OF THE CIRQUES THEODORUS AND PIZOMAS

A. L. Sukhanov

ABSTRACT. The geological and physical features
within this region are discussed. A historical perspec-
tive of these charts is given.

EXPLANATORY NOTES FOR THE GEOLOGICAL-MORPHOLOGICAL CHARTS
FOR THE REGION OF THE GRATER ANCHIMIDES AND THE ALPINE
AND HADYUS MOUNTAINS

V. G. Yefimov

ABSTRACT. The geology and physical properties
of features within the stated region are discussed. The
history of this region is traced back to 1896.

ix

ANCIENT SEAS OF THE MOON

A. L. Subbotin

ABSTRACT. Research on lunar maria performed by American and Russian scientists is discussed. The discussion begins with the analysis of J. E. Spurr in 1944.

FEATURES OF LAVA-SHEET FORMATION ON THE MOON

A. M. Gubik, Ye. M. Rybina, N. V. Stokolskaya,
A. M. G. Zhuravskiy, and A. A. Ponomarev

ABSTRACT. Observations of volcanic activity on the moon are discussed. The heat losses experienced by the lava due to radiation, convection and other processes are analyzed. Other problems analyzed include processes of the lava, bubble rising in the melt, and other physical phenomena.

5
SOME FEATURES OF THE SMALL CRATERS OF THE MOON

A. L. Sukhany

ABSTRACT. Craterlets, which are craters on the order of a few kilometers, are considered to be of impact origin, and therefore have features which are distinctly different from those of craters on the Moon. Research by American and Russian scientists on the topic is discussed.

UNEVEN DISTRIBUTION OF ASTEROID STRUCTURES ON THE MOON ON THE BASIS OF THEIR DIAMETER

P. V. Pliginskii, Ye. I. Zhukovskii,
Ac. S. V. Khrushchov and Ye. G. Pliginskii

ABSTRACT. The irregular also frequency-distribution of ring structures on the Moon is discussed. A history of the problem of the distribution of the masses of craters as a function of their diameter is given. Data obtained from the Luna-9 and Ranger-7 spacecrafts are described.

x1

COMPARISON OF FORMS OF LUNAR RELIEF WITH TERRESTRIAL
VOLCANIC FORMATIONS

V. G. Zefirov

ABSTRACT. Recent evidence shows that the terrestrial features of the Moon are due both to tectonic and endogenic processes. Those features of the Moon are classified according to their origin. Several volcanic features on the Earth.

VOLCANIC RIDGES ON THE MOON

A. L. Subbotin

ABSTRACT. Volcanic ridges on the Moon are classified according to their origin, geometrical shape and size.

x11

SOME GENERAL FEATURES OF THE DEVELOPMENT OF STRUCTURES
ON THE MOON AND DETAILS OF ITS GEOLOGICAL HISTORY.

M. S. Mikhaylov
A. L. Sukhanov

ABSTRACT. The processes leading to the formation of various lunar features are identified. The authors present a discussion of the development of the largest scale features (continents and maria) on the Moon.

GEOLOGICAL COMPARISON OF THE MOON AND EARTH

V. G. Titmanov
P. V. Plorentskiy

ABSTRACT. The geological processes leading to the layering on the Moon are discussed and compared with processes on the Earth. Research conducted by various Russian and American scientists on volcanic activity is described.

xiii

1/2 031
UNCLASSIFIED
TITLE--SOME GENERAL REGULARITIES IN THE DEVELOPMENT OF THE MOON'S
STRUCTURES AND PECULIARITIES OF ITS GEOLOGICAL HISTORY -U-
AUTHOR--(02)--MARKOV, M.S., SUKHANOV, A.L.
COUNTRY OF INFO--USSR
SOURCE--PROBLEM GEOLOGII LUNY: AKAD. NAUK SSSR GEOL. INST. TRUDY, NO. 204,
P. 262-273, ILLUS., 1969
DATE PUBLISHED-----70
SUBJECT AREAS--ASTRONOMY, ASTROPHYSICS, EARTH SCIENCES AND OCEANOGRAPHY
TOPIC TAGS--LUNAR CRATER, ROCK, LUNAR TOPOGRAPHY, GEOLOGY, TEMPERATURE,
HEAT CONDUCTION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3008/0713
STEP NO--UR/0000/69/000/204/6262/0273
CIRC ACCESSION NO--AT0137788
UNCLASSIFIED

2/2 031

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AT0137788

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. WITHIN THE GENERAL SIMILARITY OF THE LUNAR CRUST THERE ARE DIFFERENCES IN STRUCTURE BETWEEN MARIA AND TERRAE IN STRUCTURE, ELEVATION, AND DISTRIBUTION ON THE SURFACE. THE DENSITY OF CRATERS, MEASURED BY THE AID OF AN EQUAL AREA PROJECTION, INCREASES WITH DISTANCE FROM MARIA. TEMPERATURE ANOMALIES, ON THE OTHER HAND, HAVE A TENDENCY TO CONCENTRATION ALONG MARE ZONES; THEY MAY CORRESPOND TO DIFFERENT HEAT FLOW IN THE LUNAR INTERIOR. EVIDENTLY THE GROSS COMPOSITION OF THE ROCKS OF THE TERRAE AND MARIA ARE SOMEWHAT DIFFERENT.

UNCLASSIFIED

1/2 013 UNCLASSIFIED
TITLE—MASCUNS OF DEPRESSIONS IN LUNAR MARIA -U-

PROCESSING DATE--09OCT70

AUTHOR--(02)--MARKOV, M.S., SUKHANOV, A.L.

COUNTRY OF INFO--USSR

SOURCE--PRIRODA, NO. 3, 1970, P. 84-87

DATE PUBLISHED-----70

SUBJECT AREAS--ASTRONOMY,ASTROPHYSICS

TOPIC TAGS--LUNAR SURFACE, GEOLOGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1991/0874

STEP NO--UR/0026/70/000/003/0084/0087

CIRC ACCESSION NO--AP0110595

UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0110595

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DISCUSSION OF THE POSSIBLE NATURE OF LUNAR MASS CONCENTRATIONS (MASCONS) IN THE DEPRESSIONS OF LUNAR MARIA AS OBSERVED BY LUNAR ORBITER V. AN ATTEMPT IS MADE TO EXPLAIN THESE ANOMALIES BY THE DEEP SEATED STRUCTURAL FEATURES OF LUNAR MARIA LINKED WITH THE GEOLOGICAL HISTORY OF THE MOON. A TWO LAYER MODEL OF THE LUNAR CRUST IS PROPOSED TO EXPLAIN THE OCCURRENCE OF MASCONS.
FACILITY: AKADEMIIA NAUK SSSR, GEOLOGICHESKII INSTITUT, MOSCOW, USSR.

UNCLASSIFIED

1/2 013 UNCLASSIFIED
TITLE--MASCONS OF DEPRESSIONS IN LUNAR MARIA -U-

PROCESSING DATE--09OCT70

AUTHOR--(02)--MARKOV, M.S., SUKHANOV, A.L.

COUNTRY OF INFO--USSR

SOURCE--PRIRODA, NO. 3, 1970, P. 84-87

DATE PUBLISHED--70

SUBJECT AREAS--ASTRONOMY, ASTROPHYSICS

TOPIC TAGS--LUNAR SURFACE, GEOLOGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1991/0874

STEP NO--UR/0025/70/000/003/0084/0087

CIRC ACCESSION NO--AP0110595

UNCLASSIFIED

2/2 013 UNCLASSIFIED PROCESSING DATE--09OCT70
CIRC ACCESSION NO--AP0110595
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DISCUSSION OF THE POSSIBLE NATURE
OF LUNAR MASS CONCENTRATIONS (MASCONS) IN THE DEPRESSIONS OF LUNAR MARIA
AS OBSERVED BY LUNAR ORBITER V. AN ATTEMPT IS MADE TO EXPLAIN THESE
ANOMALIES BY THE DEEP SEATED STRUCTURAL FEATURES OF LUNAR MARIA LINKED
WITH THE GEOLOGICAL HISTORY OF THE MOON. A TWO LAYER MODEL OF THE LUNAR
CRUST IS PROPOSED TO EXPLAIN THE OCCURRENCE OF MASCONS.
FACILITY: AKADEMIYA NAUK SSSR, GEOLOGICHESKII INSTITUT, MOSCOW, USSR.

UNCLASSIFIED

1/2 036
UNCLASSIFIED
TITLE--GAMMA RAYS FROM THE INELASTIC INTERACTIONS OF 14 MEV NEUTRONS WITH
NITROGEN, OXYGEN, ALUMINUM, AND IRON -U-
AUTHOR--(02)--SUKHANGV, B.I., TKACH, N.P.
COUNTRY OF INFO--USSR
SOURCE--YAD. FIZ. 1970, 11(1), 33-5
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--NEUTRON BOMBARDMENT, INELASTIC SCATTERING, EXCITATION CROSS
SECTION, PHOTO EMISSION, GAMMA SPECTROMETER, COMPTON EFFECT,
SEMICONDUCTOR DETECTOR, NITROGEN, OXYGEN, IRON, ALUMINUM, GAMMA SPECTRUM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1980/0173
STEP NO--UR/0367/70/011/001/0033/0035
CIRC ACCESSION NO--AP0048465
UNCLASSIFIED

2/2 036

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NU--AP0048465

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE YIELD CROSS SECTION OF GAMMA QUANTA RESULTING FROM INELASTIC INTERACTION OF 14-MEV N WITH N, O, AL, OR FE NUCLEI ARE GIVEN. THE MEASUREMENTS WERE MADE IN THE ENERGY REGION E EQUALS 0.7-4.5 MEV BY MEANS OF THE 2 CRYSTAL COMPTON SPECTROMETER WITH 60 TIMES 60 MM STILBENE CRYSTALS. THE N BACKGROUND WAS REDUCED BY THE METHOD OF THE DIFFERENCE OF THE FLUORESCENCE LIFETIME. THE COINCIDENCE RESOLVING TIME APPROXIMATELY EQUAL TO 10 PRIME NEGATIVE SEC. THE GAMMA RAYS SPECTRA ARE PRESENTED. THE PEAK TO VALLEY RATIO WAS BETTER THAN BY USING THE 1 CRYSTAL NAI(TL) SPECTROMETER.

UNCLASSIFIED

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USSR

KHARITONOV, B. S., SHEPEL'KOVA, L. V., SUKHANOV, G. B.

"Combinatorial Problems in Computer Technology"

Kombinatornyye Zadachi v Vychislitel'noy Tekhnike [English version above], Frunze, Ilim Press, 1973, 51 pp (Translated from Referativnyy Zhurnal Kibernetika, No 10, 1973, Abstract No 10V320K)

Translation: Elements of the theory of mathematical models of complete and normalized n -groups are presented. The models of complete and normalized groups of numbers allow clear representation of processes of performance of arithmetic operations in electronic computers.

Three different algorithms for the performance of the operation of multiplication in electronic computers are studied, and evaluations are given of the application of these methods using the theory of a full n -group of numbers. An analyzer is designed for accelerated multiplication. The effectiveness of the analyzer is estimated as a function of the properties of the numbers with which the machine operates.

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USSR

UDC 536.46

GOSMINTSEV, Yu. A., SUKHANOV, L. A., POKHIL, P. F., Moscow

"The Theory of Unstable Combustion of Powder. Combustion with Harmonically Changing Pressure"

Zhurnal Prikladnoy Mekhaniki i Tekhnicheskoy Fiziki, No 5, 1971, pp 60-69.

ABSTRACT: It is demonstrated that in order to construct a theory of the unstable burning of a powder, it is necessary to know the stable dependences of combustion rate u_0 , surface temperature T_s and flame temperature T_f on external parameters and initial powder temperature. Processes of combustion in an unlimited volume are studied within the framework of the theory, when one of the external parameters changes harmonically.

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- 43 ..

USSR

UDC 536.46

GOSTINTSEV, Yu. A., SUKHANOV, L. A., POXHIL, P. F., Moscow

"The Theory of Unstable Combustion of a Powder. Stability of Processes in a Semi-Closed Volume"

Zhurnal Prikladnoy Mekhaniki i Tekhnicheskoy Fiziki, No 6, 1971, pp 65-73.

ABSTRACT: Based on the phenomenological theory of unstable combustion, equations are produced describing processes during combustion of a powder in a semi-closed volume. The solution of these equations is found with slight changes in critical nozzle cross section. The stability of the processes within the chamber is studied.

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USSR

UDC 541.126

GOSTINTSEV, Yu. A., POKHIL, P. F., and SUKHANOV, L. A.

"Complete System of Equations for Nonstationary Processes of Gunpowder Ignition in a Half-Closed Space"

Moscow, Doklady Akademii Nauk SSSR, Vol 195, No 1, 1970, pp 137-139

Abstract: A novel approach is used to study the problem of powder burning in a semi-enclosed space. The article considers two theoretical effects: the first, the nonadiabatic nature of the nonstationary flame front, connected with the time-variable heat flow from the flame to the condensation phase of the powder; second, the incompleteness of the chemical reactions inherent in the burning of condensed material in a steady-state mode at low pressure and in the burning of the material in a nonstationary mode at high temperature gradients on the surface. To formulate the problem, a model of powder ignition was used with variable temperature of the heated surface and with a quasi-stationary gas phase and chemical reaction zone in the condensation phase. The authors are connected with the Institute of Chemical Physics, Academy of Sciences USSR, Moscow.

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USSR

UDC 629.7.036.54-66:535.46

SUKHANOV, L. A., GOSTINTSEV, YU. A., and POKHIL, P. F.

"The Interaction of Burning Gunpowder with the Acoustic Field in the Presence of Equilibrium Reversible Chemical Reactions in a Gas Behind the Flame Front"

Odessa, 11-ya Vses. Konf. po Vopr. Ispareniya, Gorennya i Gaz. Dinamiki Dispersn. Sistem, 1972 -- Sbornik (11-th All-Union Conference on Problems of the Evaporation, Combustion, and Gas Dynamics of Dispersed Systems, 1972 -- Collection of Works), 1972, p 34 (from Referativnyy Zhurnal -- Aviatsionnyye i Raketnyye Dvigateli, No 1, 1973, Abstract No 1.34.145 Resume)

Translation: On the basis of a phenomenological model of unsteady combustion, the authors discuss the process of the interaction of burning gunpowder with the acoustic field, in the case where the products behind the flame are capable of reversible chemical reactions. It is found that the presence of chemically active combustion products behind the flame front exerts an effect, in the first place, upon the decrease of sound velocity in comparison with the sound velocity in a chemically "frozen" medium, and secondly, upon a decrease of the coefficient of reflection of the pressure waves from the combustion zone.

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1/2 025
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PROCESSING DATE--09OCT70
TITLE--EFFECT OF STRUCTURAL FACTORS ON THE RATIO OF SPECIFIC LOSSES P
SUB1.0 OVER 50 AND P SUB1.5 OVER 50 OF COLD ROLLED TRANSFORMER STEEL -U-
AUTHOR-(G4)-KAZADZHAN, L.B., SAKIR, N.P., SUKHANOV, L.F., SHAPOVALOV, A.F.
COUNTRY OF INFO--USSR
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LATTICE DEFECT, MAGNETIC HYSTERESIS, MAGNETIC INDUCTION
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ABSTRACT. IT IS USUALLY ASSUMED THAT P
SUB1.0-50 DEPENDS MORE ON THE STRUCTURE THAN P SUB1.5-50. IN THIS
CONNECTION THE CAUSES WERE INVESTIGATED OF THE DIFFERENCES OF THE LOSS
RATIOS AT VARYING VALUES OF THE MAGNETIC INDUCTION AMPLITUDE.
INDUSTRIAL TRANSFORMER STEEL WAS EMPLOYED IN THE STUDY. LATTICE DEFECTS
SUCH AS IMPURITIES OR RESIDUAL STRESSES INCREASE THE HYSTERESIS LOSSES
AND DO NOT AFFECT THE EDDY CURRENT LOSSES. IT IS SUCH DIFFERENCES IN
THE EFFECT OF STRUCTURAL FACTORS ON THE LOSS COMPONENTS THAT CAUSE A
VARYING CHANGE IN THE TOTAL SP. LOSS AT DIFFERENT MAGNETIC INDUCTION
AMPLITUDES.
USSR. FACILITY: NOVO-LIPETSK. MET. ZAVOD, NOVO-LIPETSK.

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